

The Closed-Loop Scoop

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Support expressed for future based on sustainability principles

Contributors: Cheryl Strange & Megan Roberts

At its September meeting, the state Solid Waste Advisory Committee (state SWAC) affirmed support for the plan's draft long-range vision of a preferred future: that waste is viewed as an inefficient use of resources, and that wastes should be eliminated where practicable. This future will include a materials-management system with increased emphasis on waste reduction, resource and energy conservation, materials reuse and pollution prevention. The vision recognizes that our current system has been thoughtfully developed, but is not sustainable in the long term. Still, we need continued effort to maintain our current facilities as we transition to the long term.

Over 165 people attended last spring's round-table meeting series around the state and expressed support for the same vision. Participants in the state planning process also agreed that moving beyond waste to maximized reuse of materials will take many years, so it is important that the existing waste handling systems be maintained and operated efficiently in the interim.

Input from last spring's round-table meeting series has been compiled into a report entitled "Round Table Meeting Results." This report is available for review on the state plan Web site at www.ecy.wa.gov/programs/swfa/swplan

The state solid waste plan revision continues to move forward. Ecology project staff are currently reviewing the comments and ideas received to date, and are developing a list of recommended priorities the state plan should address to begin the transition to a more sustainable future. Plans are also underway to establish an advisory workgroup to work with Ecology and the state SWAC on further plan development. People interested in participating in the state plan efforts will continue to have opportunities to do so in the future. Ecology solid waste staff has joined forces with hazardous waste staff to coordinate the state solid waste plan revision with an update of the state hazardous waste plan.

Both plans are scheduled for completion by 2003, and several potential approaches will be researched and evaluated collaboratively. While the two plans remain separate, the overall coordinated effort has been named "Beyond Waste," which signifies the desire to create a future with almost no waste. *(continued as State plan on page 4)*

Increased recycling rate puts Washington on right track

By Gretchen Newman

Figures from the Department of Ecology's (Ecology) annual recycling survey show that Washington's recycling rate rose in 2000. The statewide rate rose to 35 percent, from its decade-low of 32 percent in 1999. The recycling rate of 1995 was the highest yet at 40 percent.

The Waste Not Washington Act of 1989 established a 50 percent recycling goal to be achieved by 1995. Although cities and counties have largely established the collection infrastructure initiated by this legislation, recycling rates have not reflected these conditions as much as expected. Even so, Washington state is still among the leading states in recycling. The national average is 28 percent.

The increase in the recycling rate can be attributed to improvement in resale markets, increased commercial recycling, and the addition of commingled collection on some curbside programs. Another important factor that has influenced the recycling rate over the years is the growing number of recycling businesses reporting their collected tons to Ecology. *(continued as Increased recycling rate on page 4)*

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School awards program placed on hiatus

By Michelle Payne, Awards Coordinator

After a great deal of thought and input from past applicants and local government staff, Ecology has decided to postpone the Terry Husseman Outstanding Waste Reduction and Recycling Public School Awards Program for one year. This decision was not easy since this awards program helps schools have a positive impact on our environment. The good news is that during this time we will be reviewing the program and making changes that reflect our vision of a sustainable environment.

For the past several years, we have had a low number of applicants, and many of those schools participated in prior award cycles. We have heard from some of our more rural areas that some schools need assistance with initiating waste reduction and recycling programs. We have also had many schools tell us that the application process is too complicated for such a small amount of money. During this year-long hiatus, we will be looking at many possibilities. One that we will be considering is a competitive award process that could provide “seed” money to selected applicants. The seed money would cover waste reduction and recycling program start-up costs.

If you would like to be involved in the development of new criteria and information material, please visit the website at <http://www.ecy.wa.gov/programs/swfa/terryhusseman.html> or contact Michelle Payne at (360) 407-6129 or email: mdav461@ecy.wa.gov.

How would you explain this to your Grandmother?

By Dolores Mitchell

Engineers in our Industrial Section write and enforce both wastewater discharge permits and air operating permits, under delegated authority from the federal government. The permits regulate the environmental impacts of metals smelters, petroleum refineries, and pulp and paper mills operating within the State of Washington. Each permit limits the amounts and kinds of pollutants a facility may safely release into our environment, and defines specific monitoring and reporting requirements. These permits are updated at five-year intervals. The Industrial Section is currently in the process of updating the permits issued to operators of each of the big three regulated industries.

Staff of the pulp and paper unit have had to incorporate U.S. E.P.A. program revisions into the current permit cycle. The mill operators are familiar with the permitting process and they had received enough preliminary information to anticipate the revisions. Those families and communities residing near mill facilities, however, are far less interested in the technological and procedural aspects of the permitting process; they want to know how the permit will influence the mill's impact on their quality of life.

In an effort to answer their questions and obtain meaningful comment about the draft permit, we designed a different way to conduct a public hearing. Program and Section Management, senior staff, engineers and section support staff agreed to trying the interactive format and more visual tools to better prepare the public to comment on the wastewater discharge [NPDES] Permits and Air Operating Permits [AOP] for this industry.

For the Simpson-Tacoma kraft mill NPDES Permit hearing, we (1) premiered a three-dimensional model of a “generic” paper making mill, illuminating points in the process where the NPDES Permit and the Air Operating Permit limit pollution releases. We (2) advertised the event as a “drop-in hearing” and set up the room in an “open house” configuration, promoting one-to-one and small group discussions about specific permit requirements and the permitting system. And we (3) borrowed from the facility operator large aerial photographs of the facility site, showing the mill's location and footprint and its wastewater discharge outfall area.

Scheduled on the evening of September 18th—just one week after the East Coast terrorist attacks—participation was much lower than we had anticipated. Those who did attend, however, showed interest in the visual displays and engaged in dialogue both with our staff and with each other. Rather than record their oral comments there and then, people said they would send written comments before expiration of the formal comment period.

We measured the success of the Simpson-Tacoma permit hearing against the quality of formal comments received on other permitted pulp and paper facilities. The written public comments received by the permit writer arrived within the formal comment period deadline. The comments focused upon the proposed permit's polluted water discharge limits, the new monitoring methods and frequency, and the operator's performance obligations and reporting requirements—exactly the kind of input we were seeking. The end result will be a more environmentally protective NPDES permit for Simpson.

Ecology offers ground water statistics class

By Sally Safioles

Ecology will sponsor an Applied Ground Water Statistics Workshop on March 11 and 12, 2002, presented by Intelligent Decisions Technologies, Inc. The workshop is designed to teach environmental professionals a fundamental understanding of ground water statistics recommended by EPA for solid waste facilities. The course includes the use of the Sanitas software package designed to store, analyze and report ground water information. To view the course outline, go to www.idt-ltd.com/Sanitas/Sanitas5.html. Dr. Kirk Cameron, who is one of the co-authors to EPA's statistical guidance, will be one of the presenters at the workshop. The workshop will be held at Ecology's headquarters in Lacey. The class is limited to 20 participants. Priority will be given to the jurisdictional health departments that are involved with evaluating ground water results at permitted solid waste facilities. The workshop is free to participants. Participants will need to pay for their own lodging, meals and transportation costs. To register for the class or if you have questions, call Sally Safioles at 425-649-7089 or e-mail at ssaf461@ecy.wa.gov. Registration deadline is February 11, 2002.

Communities to can recycle rechargeable batteries for free

The Rechargeable Battery Recycling Corporation (RBRC) is now offering completely free rechargeable battery recycling to community collection programs. Previously there were some administrative fees.

Some local programs are already using this industry-funded program to close the loop on the most common rechargeable batteries. Through the no-cost program, RBRC will handle the collection of all portable rechargeable batteries, including Nickel Cadmium (Ni-Cd), Nickel Metal Hydride (Ni-MH), Lithium Ion (Li-ion) and Small Sealed Lead (Pb) rechargeable batteries [sealed lead batteries must each be less than 2 pounds (1 kg)].

RBRC will provide automatic replenishment of supplies, such as recycling boxes and collateral materials, to community recycling centers. In addition to saving money, community recycling coordinators will also enjoy the benefit of fewer administrative tasks such as purchase orders, reimbursements and check requests that are typically associated with processing payment.

To find out more or to sign up in the western U.S., contact Sean Burchill, 949 215-4620, e-mail: sburchill@rbrc.com. Over 300 communities in the United States and Canada currently take part in the Charge Up to Recycle!® program. These community programs are in addition to the over 30,000 retail locations across the U.S. and Canada participating in the RBRC program.

Rechargeable batteries are found in a wide range of portable electronic products, including cellular and cordless phones, camcorders, laptop computers and cordless power tools. Consumers can find the nearest rechargeable battery drop-off location by calling 1-800-8-BATTERY or by going online at www.rbrc.org.

Calendar of Events

January 13 to 16, 2002, National Recycling Coalition's 20th Annual Congress & Exposition in Seattle, WA. Contact Rebecca Mebane, 703-683-9025 ext. 206, RebeccaM@nrc-recycle.org or <http://www.nrc-recycle.org>.

August 27 to 30, 2002, The National Pesticide Stewardship Alliance Annual Conference will be held in downtown Seattle, WA. Contact Kathy Brooks at 202-550-0587 or kbrooks@arrowchase.com. Information on the conference will be posted on the NPSA's website as it is available: www.npsalliance.org.

April 3 to 5, 2002, The EnvironDesign6 Conference will be held at the Seattle Conference Center in Seattle, WA. For more information, call 561-627-3393 or www.enviromdesign.com 561-683-9025 ext. 212, LukeM@nrc-recycle.org.

March 11-12, 2002, Ground Water Statistics Workshop, Dept. of Ecology, Lacey, WA. To register call Sally Safioles at 425-649-7089 or e-mail ssaf461@ecy.wa.gov.

May 5 to 8, 2002, Washington State Recycling Association's 22nd Annual Conference will be held at the Wenatchee Convention Center, Wenatchee, WA. Present your "cutting edge" work at Washington's premier recycling conference. Contact Agenda Committee Chair Jim Schrock, 509-534-1638 or jschrock@cet.com, or Janet Nazy at WSRA, 206-244-0311 or janetn@wsra.

Increased recycling rate *(continued from page 1)*

Of all the materials recycled or composted in 2000, paper made up 43 percent; organic wastes (food, yard waste and wood waste), 30 percent; metals, 20 percent; glass, 3 percent; plastics, 1 percent; and other materials, 3 percent.

In 2000, Ecology began tracking more information on materials that are not included in the recycling rate, as measured since 1986. These include materials that are recycled or “diverted” from the waste stream, but are not included in the Environmental Protection Agency definition of recyclable materials. Diverted materials include asphalt, concrete, construction/ demolition/land clearing debris, antifreeze and oil filters.

“The small rise in the rate tells us that something in the system is working better, and we need all citizens and businesses to remain vigilant and committed,” said Cullen Stephenson, who manages Ecology’s solid waste program.

Infrastructure improvements and the realization that recycling can equate to financial benefits have fueled commercial recycling efforts. This is good news when it comes to Washington’s recycling rate.

Ecology will continue to stress the importance of responsible waste management with its partners in recycling.

Energy Savings and CO₂ Impacts from Recycling In Washington State – 2000

(Relative to energy required for initial production from extracted resources)

Material Recycled	Tons Recovered	Reduction of Energy	BTUs Saved	Barrels of Oil Saved	Reduction of CO ₂ Emissions (tons)
Aluminum	17,945	95%	3,517,220	667,554	247,641
Paper	1,048,656	35%	17,870,256	3,393,472	3,224
Glass	84,062	31%	398,454	75,656	32,784
Ferrous Metals	357,220	61%	5,108,246	968,066	542,974
Plastics	14,623	66%	835,244	158,948	8,319
Total			27,729,420	5,263,696	834,941

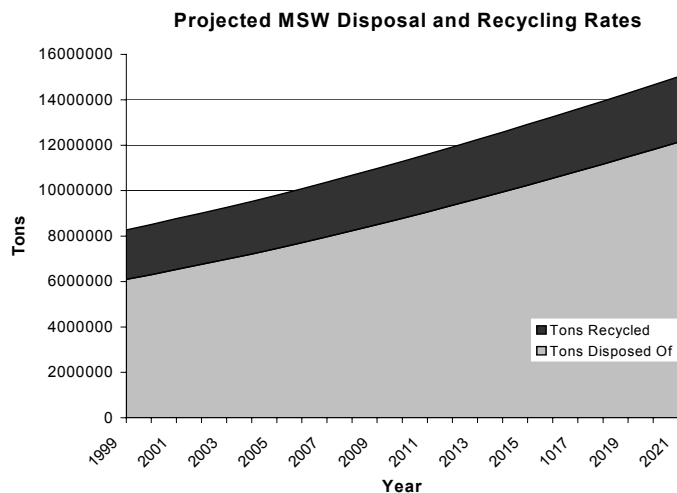
State plan *(continued from page 1)*

Options being researched include ways to reduce overall generation of waste (such as product and process redesign), economic incentives/ disincentives, product take-back, education and others. The graph below indicates the amount of waste we will be collecting, handling, transporting, burying and burning in the future if we do not change our ways. We can no longer afford the safety, health, economic and environmental impacts of turning so many resources into waste. To become involved with planning efforts for the state solid waste plan, or to get more information, please visit:

<http://www.ecy.wa.gov/programs/swfa/index.htm>

1. State plan-related publications are also available to view online at this Web site. Please contact Megan Roberts at 360-407-6167 with any further questions.

NOTE: The state plan web site will soon have a new look. It is being redesigned to serve as a resource for the entire Beyond Waste project, which includes both the solid waste and the hazardous waste plans. In the meantime, existing information will continue to be available on the site.



Estimated solid waste disposal and recycling rates projected to 2021. Estimates are based on average per capita waste generation increases and projected population increases over time. **These estimates assume that changes in the consumption, disposal and recycling habits of Washingtonians follow the trends of recent years.** Note that the total disposed of becomes a greater percentage of the total waste stream. A falling percentage recycling rate is anticipated. The modest gains in recycling tonnage are due only to population increases.

Consumer's guide to environmental choices now available

by Warren Leon,

Reprinted with permission from the Union of Concerned Scientists, *Nucleus*, Vol. 21, No. 1, Spring 1999

Paper or plastic? Minivan or station wagon? Cloth diapers or disposables? The choices you and other Americans make at home shape the environment. But how can you tell which of the hundreds of household decisions you make are important and which are insignificant?

A new UCS book—The Consumer's Guide to Effective Environmental Choices—helps people set personal environmental priorities and distinguish meaningful choices from those that are trivial. It's the first time anyone has taken a comprehensive look at the wide range of consumer activities in order to identify which of the things consumers buy and do cause the most environmental damage. It also highlights which of the many possible changes people could make in their personal lives would have the greatest benefit. And it explains when the emphasis should be on changing the policies of governments and institutions rather than on the individual choices of consumers. This

handy reference guide provides all the information anyone needs to make environmentally sound decisions.

The Most Harmful Consumer Activities

Cars and Light Trucks The manufacture and, more important, the use of consumers' vehicles cause more environmental damage—especially air pollution and global warming—than any other single consumer spending category.

Meat and Poultry Meat and poultry production requires large amounts of water and causes 20 percent of the common (as opposed to toxic) water pollution related to consumer expenditure. It also uses a significant share of the nation's land—800 million acres for grazing livestock and an additional 60 million acres to grow animal feed. Red meat causes especially high amounts of environmental damage for the nutrition it delivers.

Fruit, Vegetables, and Grains Irrigated crops grown to meet consumer demand use an enormous quantity of water (30 percent of consumer-related water use). Pesticides and fertilizers cause 5 percent of consumer-related toxic water pollution. Food crops also use substantial amounts of land.

Household Appliances and Lighting Electricity seems clean and nonpolluting when it's used in the home, but most of it is generated by burning polluting fossil fuels, especially coal. Appliances and lighting are responsible for 15 percent of the greenhouse-gas emissions related to consumer expenditures and 13 percent of consumer-related common air pollution.

Home Heating, Hot Water, and Air Conditioning Cooling and heating homes and water has an impact on global warming and air pollution similar to that of appliances and lighting. Systems that rely on electricity or oil contribute heavily to both problems. Most fireplaces and wood stoves are especially high air polluters.

Home Construction The land and wood used for new homes are responsible for about a quarter of consumers' impact on wildlife and natural ecosystems. Six percent of consumer-related water pollution comes from manufacturing the materials for new homes and disturbing the soil during construction.

Household Water and Sewage Despite advances in sewage treatment, municipal sewage remains a major source (around 11 percent) of water pollution, especially affecting coastal areas and estuaries. Interestingly, households' home water use is only 5 percent of the total compared with nearly 74 percent for food production and distribution.

In addition to focusing people on their most important choices, the book also helps them stop worrying about decisions that involve alternatives whose differences are insignificant. As the book shows, no one should feel guilty about moderate use of such things as spray cans, polystyrene cups, plastic bags, paper napkins, and disposable diapers.

Investigating Earthkeeping Measures

To reach our conclusions, we first determined which of the many environmental problems in the news are most significant and which of these result primarily from consumers' actions. As our starting point, we looked at two comparative assessments of environmental risks by the US Environmental Protection Agency and the California Comparative Risk Project. From the problems these studies ranked as serious threats to human health and the environment, we eliminated those not linked to current household consumption (for example, inactive hazardous waste sites and banned chemicals like PCBs), since consumers' decisions cannot alleviate them. This left four leading consumption-related environmental problems: air pollution, global warming, water pollution, and the alteration of natural habitats.

By combining information about these key problems with data on consumer spending patterns, we came up with a model that can quantitatively analyze how specific purchases, from butter and breakfast cereals to toys and tires, affect the environment. The result is a rating system that allows us (and the book's readers) to make comparisons between 134 household spending categories, such as cutlery, carpets, and clocks. *(continued as Better homes and planet on page 6)*

Better homes and planet *(continued from page 5)*

We were also able to determine how big a difference certain consumer choices—like buying a more efficient car or eating less meat—would make in a person's environmental impact. For example, suppose someone decides to economize by spending less on the household's utility bills. According to our analysis, reducing electricity use would have roughly 100 times greater impact on common air pollution and global warming than reducing spending on telephone bills by an equal amount, as well as 55 times greater impact on common water pollution and 5 times greater impact on toxic air pollution.

The most important conclusion we reached is that only a few consumer activities are responsible for the vast majority of consumer-related damage. We grouped spending into 50 major categories (e.g., dairy products, furnishings, clothing), but found that most environmental degradation is linked to just seven of these categories. Collectively, the dirty seven are responsible for roughly two-thirds of the greenhouse gases that can be traced to consumer behavior and three-fifths of the air pollution.

This finding is important because it shows that how people spend their money does indeed matter. Nothing would be more discouraging than to discover that no matter what a person does (short of living in a cave), about the same amount of environmental damage will result. Instead, some kinds of consumption are much worse for the environment than others.

The use of cars and light trucks causes more environmental damage than anything else consumers do. In terms of greenhouse gases, just over a quarter of the 14 tons of carbon emissions an average household produces each year is linked to its vehicles. While a small share of this can be traced to automobile manufacturing, driving accounts for most (85 percent).

Similarly, much of the air pollution consumers cause comes from cars and light trucks: 22 percent of common air pollutants (ozone, sulfur dioxide, fine particulate matter, and the like) and 46 percent of toxic air pollutants such as benzene and formaldehyde. Indirectly, vehicles are also a major source of water pollution, from automobile manufacturing, runoff from highways, and oil and gasoline production. They are even responsible for 13 percent of the ecologically harmful land use—for the road network.

Earthkeeping made easy

Because cars cause so much harm, modest changes can produce a significant reduction in people's overall environmental impact. For example, if their cars averaged 27 rather than 23 miles per gallon, the average household's total contribution to global warming and air pollution would decrease by 5 percent. In similar ways, changes in the other six areas on the most harmful list can produce marked environmental improvement. In the book, we identify 11 priority actions for consumers.

You might wonder what we suggest people do in the food area, since fruits, vegetables, and grains, as well as meat and poultry, make it onto the most harmful list. We aren't arguing that people stop eating. Producing food will always be a resource-intensive activity that produces some environmental dislocation. However, its impacts could be reduced considerably through systemic changes undertaken by farmers with the assistance and prodding of governments. Individual consumers can help move the food system in the right direction by buying organic produce and grains. And they can reduce their consumption of beef and pork, which is especially bad for the environment.

Some consumer activities that are highly damaging do not make it onto the top seven list, because they account for very small shares of total consumer spending. Lawn pesticides, powerboats, snowmobiles, fireplaces, and hazardous cleaners and paints all fall into this category. Consumers should either avoid buying or using these items or should take precautions, as outlined in the book, to reduce their environmental impacts.

The UCS Web site <http://www.ucsusa.org/ucs-home.html> features publication samples and ordering information. The book was published in 1999 by the Three Rivers Press imprint of Crown Publishers. To order by phone, call UCS at 617-547-5552.

Long-lasting herbicides in compost

For more than a year and a half, two composting operations in eastern Washington have been troubled by the presence of long-lasting herbicides in their finished compost. The Washington State University (WSU) Compost Facility in Pullman and the Spokane Regional Compost Facility still cannot sell their compost on the open market due to clopyralid contamination. The WSU facility also experienced problems with picloram, a compound related to clopyralid.

Clopyralid is the active ingredient in Confront®, an herbicide used to kill dandelions and clover in home lawns and other turf areas. Clopyralid is also found in several other formulations used to kill broad-leaf weeds in pastures and in agricultural crops such as mint, hay, grains and asparagus. Unlike other herbicides, clopyralid does not break down during a typical 60- to 90-day composting process. It is adsorbed in some way into the organic matter in the compost, making it resistant to breakdown. When present in just a few parts per billion in compost, clopyralid damages susceptible plants, most notably tomatoes, peas and beans.

Over the past several months, many groups (including local and state government agencies, composters, and recycling organizations) have urged the US Environmental Protection Agency and the Washington State Department of Agriculture (WSDA) to re-evaluate the registration of clopyralid-containing herbicides. Representatives of these groups have expressed concern about the incompatibility of current composting systems with long-lasting herbicides.

**Given the threat to
the composting
industry and
increased organic-
material recycling,
Clopyralid is
receiving national
attention.**



Due to collection and consolidation of yard debris from multiple sources, municipal composting systems are vulnerable to clopyralid contamination. Between homeowners, people who apply the herbicide, collectors of yard debris, and compost facility operators, the "chain of custody" of grass clippings is lost—long before a customer buys and uses compost.

Both agricultural and municipal composting systems can be affected by clopyralid used on various crops. For example, a farmer west of the mountains received manure and oat-straw bedding from a local horse owner. He composted the materials, applied the finished compost to his fields, and ended up with damaged tomatoes and beans. The horse owner unknowingly had sent clopyralid residues to the farmer. Tracing the original source of clopyralid proved to be impossible. Since a bulk distributor supplies the local feed store where the horse owner bought feed and bedding, the clopyralid could have been used on one or several of the farms marketing their grain and straw to the distributor. And since clopyralid residue on feed "passes through" animals via their urine, even

compost made with only wood shavings and manure from a horse stall can be contaminated.

Given the threat to the composting industry and increases in recycling of organic materials, clopyralid is receiving national attention. BioCycle, the trade journal for composting and recycling organics, published a series of articles describing the problem in July 2001. And according to the GrassRoots Recycling Network, Dow AgroSciences, primary manufacturer of the compound, is the target of an e-mail campaign to take clopyralid off the market.

At the state level, WSDA issued a public notice in October soliciting comments from various groups regarding possible rulemaking. WSDA will convene an advisory committee if the agency determines a rule is necessary to restrict the use of clopyralid on turf or agricultural crops. If rulemaking moves forward, interested parties should expect debate. Growers of specific agricultural commodities view clopyralid as a valuable crop-protection tool. Commercial composters and agencies involved in promoting organics recycling have already witnessed (through problems in Spokane and at WSU) how devastating clopyralid contamination in compost can be.

The Department of Ecology promotes composting as a standard option for recycling yard debris and agricultural wastes. Composting provides communities with multiple environmental benefits, from reducing the amount of waste going into landfills to creating a valuable product for soil improvement and erosion control. Clearly, the use of persistent herbicides that end up in composting systems disrupts the recycling loop, turning what should be a process of renewal into a cycle of destruction.

You can make a difference

by Jay Shepard, Ecology's solid waste program sustainability lead

Preserving the earth's natural resources and environment for future generations is a huge task. The reaction many people have to the job is to say, "I can't really do anything about it myself." But, while the Department of Ecology can identify preferred directions, it truly is the daily choices of each individual that determine our collective environmental impact.

This seems a daunting responsibility. So, where do we start?

It has been reported that the United States generates 25 billion tons¹ of waste each year—that comes out to about 89 tons per person. But how can that even be possible when, for example, Washington's reported generation rate is roughly 6.6 million tons (a little more than 1 ton per person) per year?²

Well, have you ever stopped to consider what it takes to make and deliver the products that ultimately end up in our Municipal Solid Waste (MSW) stream—our garbage? For example, how much waste is generated extracting raw materials from the Earth's crust? How much scrap is generated processing that primary material? What kind of waste is generated in transporting the material to the factory? And what about the costs, such as transportation, paper work and packaging, that go into getting the product to a wholesaler and a retailer?

Every step along the way generates waste. Every step along the way generates pollution. Every step along the way, waste and pollution get into the environment.

Consider an item that is purchased on any given day—a disposable razor. Think about the extraction of raw materials that go into the razor and into the packaging. For example, there is petroleum that needs processing into plastic and iron ore that needs mining, smelting, and rolling into steel.

Then think about how that razor is manufactured. The factory consumes energy and water and pollution is discharged. Next, think about the distribution and sale of that razor. Now, think about the fact that the razor is probably consumed within a week or two after purchase. In most cases, the wrapper, box, grocery sack, and the razor itself are all thrown out, not recycled back into nature or the marketplace in a manner that protects human health and the environment.

There is nothing left; however, a lot of energy, materials and time went into getting that razor to the consumer. The total waste generated is everything that went into the razor, from ore extraction to dropping the spent blade into the trash.

If you multiply that by the millions of products consumed by the public every day, you can begin to understand the magnitude of the waste-generation problem.

For every pound of product manufactured in the United States, 33 pounds of waste are generated.³ It follows that if you reduce the products you consume by one pound, you could eliminate at least 33 pounds of waste—and a 34th pound will become waste as well, unless you're able to recycle your product effectively.

If each person in the state reduced his or her consumption by just one pound, the reduction in Washington's waste would equal 200,400,114 pounds. Now you're talking some real numbers!

So, have hope. You can make a difference, one pound at a time.

This is the first in a series of articles about the concept of sustainability. In this column, we will present facts, data, policy questions and ethical issues to stimulate thought and discussion about how our present behaviors and choices affect the future.



¹ "Natural Capitalism" Hawken, et.al. 1999 p. 52

² "9th Annual Solid Waste Report" Washington State Department of Ecology, December 2000.

³ Op. Cit.

New advances in compact fluorescent lighting

(The following information was gleaned from the NorthWest Builders Network, Inc and U. S. Department of Energy web pages.)

Conserving resources improves the environment, both near and far. So where can you start? How about replacing your incandescent light bulbs with compact fluorescent lights? Besides reducing the number of light bulbs you throw out, you will be reducing your household energy needs—and the bills that go with that. Farther from home, you'll be reducing the energy needed to manufacture and transport incandescent bulbs, as well as the energy needed to haul those burnt-out, short-lived bulbs away for disposal.

According to the Rocky Mountain Institute, if every American switched to compact fluorescent lighting, half the nuclear power plants in the U.S. could close down."

Energy Efficiency with Lighting

Lighting accounts for 20% to 25% of all electricity consumed in the United States. An average household dedicates 5% to 10% of its energy budget to lighting, while commercial establishments consume 20% to 30% of their total energy just for lighting.

In a typical residential or commercial lighting installation, 50% or more of the energy is wasted by obsolete equipment, inadequate maintenance, or inefficient use. Saving lighting energy requires either reducing electricity consumed by the light source or reducing the length of time the light source is on. This can be accomplished by:

- Lowering wattage, which involves replacing lamps or entire fixtures.
- Reducing the light source's on-time, which means improving lighting controls and educating users to turn off unneeded lights.
- Using daylighting, which reduces energy consumption by replacing electric lights with natural light.
- Performing simple maintenance, which preserves illumination and light quality and allows lower initial illumination levels.

Electricity Cost Savings (With CFLs) - Based on 3-hour usage per day									
Kilowatt Hour Rate	6¢	8¢	10¢	12¢	14¢	16¢	18¢	20¢	22¢
Energy Cost Savings Over 10,000-Hour Bulb Life	\$33	\$44	\$55	\$66	\$77	\$88	\$99	\$110	\$121

Cost Comparison Chart	27w Compact Fluorescent	100w Incandescent
Cost of Lamps	\$14.00	\$0.50
Lamp Life	1642.5 days (4.5 years)	167 days
Annual Energy Cost	\$5.91	\$21.90
Lamps Replaced in 4.5 yrs.	0	\$0
Total Cost	\$40.60	\$103.55
Savings Over Lamp Life	\$62.95	\$0

This table assumes the light is on for 6 hours per day & that the electric rate is 10 cents per kw hour.

Compact fluorescent

Compact fluorescent lamps (CFLs) are the most significant lighting advance developed for homes in recent years. They combine the efficiency of fluorescent lighting with the convenience and popularity of incandescent fixtures. CFLs can replace incandescents that are roughly 3 to 4 times their wattage, saving up to 75% of the initial lighting energy. Although CFLs cost from 10 to 20 times more than comparable incandescent bulbs, they last 10

to 15 times as long. This energy savings and superior longevity make CFLs one of the best energy efficiency investments available.

To purchase compact fluorescent lamps, check in your telephone business directory under the headings Lighting or Electrical Equipment and Supplies. You can also try the better-stocked home centers, building supply houses and hardware stores. For more information contact:

U.S. Department of Energy
Energy Efficiency & Renewable Energy
Consumer Energy Information
<http://www.eren.doe.gov/consumerinfo/>

Lighting Center @ NorthWest Builders Network
Energy Efficient Lighting Fixtures, Lamps & Luminaries
www.nwbuildnet.com/stores/bm/lighting/index.html

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If you have special accommodation needs or require this document in alternative format, please contact Michelle Payne at 360-407-6129 (voice) or 360-407-6006 (TDD).

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In 2000 there were 2,451,734 housing units in Washington State. If each household replaced one 100w incandescent bulb with a 27w compact fluorescent, we would save 402,697,309 kw hours of electricity. That's enough to power over 11,000 Northwest homes and we would avoid disposing of almost 2,000,000 light bulbs per year.



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E C O L O G Y

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